THE HOBSON Update

Volume 26

From the desk of Peter Hobson

Rivets: An Introduction

"You have to sell billions of them to make money..."

"...Don't waste your time!"

I can still remember my fathers' words. However, over the last few weeks I thought it was time for me to learn about *rivets.* I started by asking people who have been in the industry a long time - they simply rolled their eyes. What I have learnt is, there are rivet guys and non- rivet guys……. and there aren't many rivet guys around!

This article is not meant to be a detailed technical publication; I have attempted to keep it interesting to a person in the fastener industry who does not know a lot about rivets.

Advantages of Rivets:

• Excellent system to clamp relatively light gauge materials together. There are many applications where the back of the job cannot be accessed such as fastening to tubes or walls. Rivets are perfect for these applications and hence are known as "BLIND" rivets as there is no need to access the rear of the joint.

• Cost effective as they can be installed by non-specialised labour up to 15 rivets per minute.

• Reliable

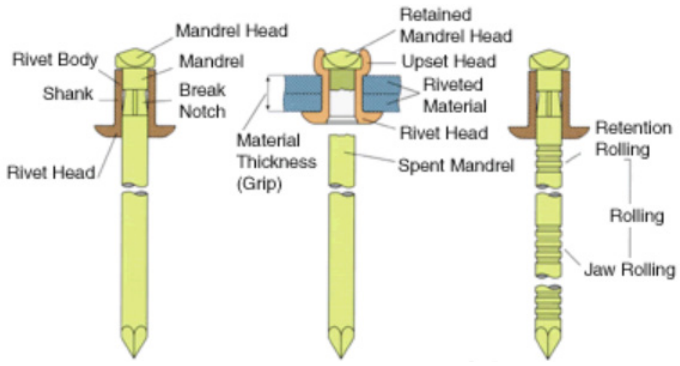


Figure 1: Basic Components of a Rivet

Blind rivets are a two part fastener consisting of the Shell (Rivet Body) and the Stem (Mandrel). The rivet is "set" by drawing the stem through the shell, which causes the shell to "swell" and clamp the material together. The stems breaks off during this process once the correct clamping force is achieved. The head of the stem remains trapped in the bottom of the shell to ensure the clamping force is retained in the joint. Various tools are used to withdraw the stem ranging from hand operated to pneumatic tools. Blind rivets are designed to clamp together specific thicknesses of material and it is this grip range that forms part of the ordering description for rivets.

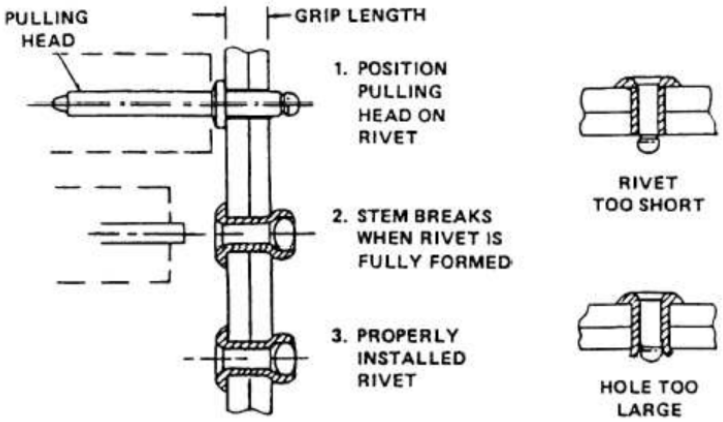


Figure 2: Setting process of a Blind Rivet

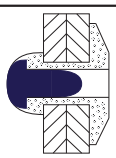
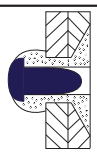
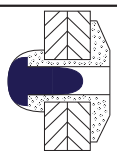
In This Issue:

How is a Rivet Described?

n. ***A metal pin for passing through holes in two or more plates or pieces to hold them together.***

Head Type:

The most common is the Truss type or often referred to as Dome head, and is known as type 73.

			
Head Type:	Truss Head (Dome Head)	Countersunk Head	Large Flange Truss head (Dome Head)
Head Designation Number:	73	72	72ASL

Material:

Shell Material:	Stem (mandrel) Material:	Code:
Aluminium	Steel	AS
Steel	Steel	SS
Stainless Steel	Steel	LS (STS)
Stainless Steel	Stainless Steel	LL (STST)
Nickel Copper	Steel	MS
Copper	Steel	CS
Aluminium	Aluminium	AA

Size:

Shell Diameter -
The logic used for the sizing is based upon the imperial system. Shell diameters are always specified in 1/32nds of an inch (0.787mm).

Shell Code:	Diameter (Inches):	Diameter (mm):
3	3/32″	2.4
4	4/32” (1/8″)	3.2
5	5/32″	4.0
6	6/32″ (3/16″)	4.8
8	8/32″ (1/4″)	6.3

Grip Range:

This is where a lot of people get confused; the grip range is NOT the length of the rivet. The grip range is specified in 1/16th of an inch (1.6mm). To select the correct rivet, it is necessary to measure the thickness of the material to be clamped.

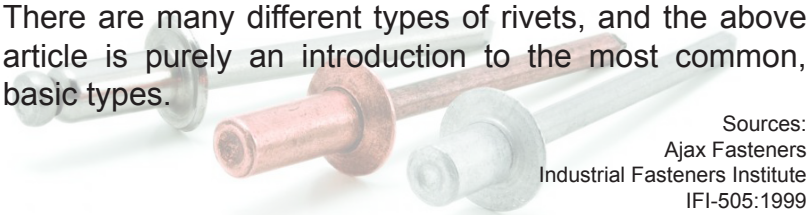
Rivet Series No:	Nom Rivet Size (mm):	Rivet No:	Grip Range (mm):	Rivet Length L (mm max.):
3	2.4	32 34 36 38 310	0.5-3.2 3.3-6.4 6.5-9.5 9.6-12.7 12.8-15.9	6.4 9.5 12.7 15.97 19.11
4	3.2	41 42 43 44 45 46 48 410 412 414	0.5-1.6 1.7-3.2 3.3-4.8 4.9-6.4 6.5-7.9 8.0-9.5 9.6-12.7 12.8-15.9 16.0-19.1 19.2-22.2	5.4 7.0 8.6 10.2 11.7 13.4 16.5 19.7 22.9 26.0
5	4.0	52 53 54 56 58 510 512 514 516 518	0.5-3.2 3.3-4.8 4.9-6.4 6.5-9.5 9.6-12.7 12.8-15.9 16.0-19.1 19.2-22.2 22.3-25.4 25.5-28.5	7.6 9.2 10.8 14.0 17.2 20.3 23.5 26.7 29.8 33.0
6	4.8	62 63 64 66 68	0.5-3.2 3.3-4.8 4.9-6.4 6.5-9.5 9.6-12.7	8.3 9.8 11.5 14.6 17.8

Table 1: Application Data Summary Only. Refer to IFI-505:1999 for all details.

To specify a rivet by the accepted code , practice is:

73AS43
→ 73 = Truss (Dome) head
→ A = Aluminium Shell
→ S = Steel Stem (Mandrel)
→ 4 = 4/32″ shell diameter (3.2mm)
→ 3 = 3/16″ Grip range (3.3-4.8mm)

There are many different types of rivets, and the above article is purely an introduction to the most common, basic types.



Sources:
Ajax Fasteners
Industrial Fasteners Institute
IFI-505:1999